

What is claimed is:

1. Liquid treatment equipment comprising:

a treatment solution bath capable of accommodating a treatment solution for implementing liquid treatment to a substrate to treat;

a treatment solution circulating system, disposed connected to the treatment solution bath, that circulates the accommodated treatment solution between an outside of the treatment solution bath; and

a product removal unit, disposed in the treatment solution circulating system, that removes a reaction product due to the liquid treatment contained in the circulated treatment solution.

2. The liquid treatment equipment as set forth in claim 1, further comprising:

an additive agent supplier, disposed connected to the treatment solution circulating system, that supplies in the circulated treatment solution an organic component additive agent and/or a sulfur component additive agent.

3. The liquid treatment equipment as set forth in claim 1, further comprising:

an additive agent concentration measuring unit, disposed connected to the treatment solution circulating system, that measures a concentration of an organic component additive agent and/or a sulfur component additive agent in the circulated treatment solution.

4. The liquid treatment equipment as set forth in claim 1, further comprising:

a volume/weight measuring unit, disposed in the treatment

solution circulating system, that measures a volume or weight of the circulated treatment solution.

5. The liquid treatment equipment as set forth in claim 1:

5 wherein the product removal unit includes an electric absorbing unit to absorb the reaction product.

6. The liquid treatment equipment as set forth in claim 1:

10 wherein the product removal unit includes a heating unit to heat the circulated treatment solution.

7. Liquid treatment equipment, comprising:

a treatment solution bath accommodating a treatment solution for implementing liquid treatment to a substrate to treat;

15 a treatment solution circulating system, disposed connected to the treatment solution bath, that circulates the accommodated treatment solution between an outside of the treatment solution bath;

20 a recycle bath, disposed in a middle of the treatment solution circulating system, that is capable of reserving the circulated treatment solution and implements recycle treatment to the reserved treatment solution; and

25 a product removal portion, disposed in the recycle bath, that removes a reaction product due to the liquid treatment contained in the reserved treatment solution.

8. The liquid treatment equipment as set forth in claim 7:

wherein the product removal portion includes an electric

absorbing unit to absorb the reaction product.

9. The liquid treatment equipment as set forth in claim 7:

wherein the product removal portion includes a heating unit to heat the circulated treatment solution.

10. The liquid treatment equipment as set forth in claim 7, further comprising:

a reservoir tank, disposed in the treatment solution circulating system on a way from the treatment solution bath to the recycle bath, that temporarily reserves the circulated treatment solution.

11. The liquid treatment equipment as set forth in claim 7, further comprising:

a buffer bath, disposed in the treatment solution circulating system on a way from the recycle bath to the treatment solution bath, that temporarily reserves the circulated treatment solution.

12. A liquid treatment method employing liquid treatment equipment comprising a treatment solution bath capable of accommodating a treatment solution for implementing liquid treatment to a substrate to treat, a treatment solution circulating system disposed connected to the treatment solution bath and circulating the accommodated treatment solution between an outside of the treatment solution bath, and a product removal unit disposed in the treatment solution circulating system and removing a reaction product due to the liquid treatment contained in the circulated treatment solution, the method comprising the steps of:

circulating the treatment solution by means of the treatment solution circulating system while or after implementing the liquid treatment to the substrate to treat; and

removing a reaction product due to the liquid treatment
5 contained in the circulated treatment solution by means of the product removal unit.

13. A manufacturing method of a semiconductor device, comprising the steps of:

coating a treatment agent containing a component
10 stimulating formation of plating and a component repressing formation of plating on a surface of a substrate to treat; and implementing liquid treatment on the surface of the substrate to treat on which the treatment agent is coated.

14. A manufacturing method of a semiconductor device,
15 comprising the steps of:
introducing a substrate to treat on a surface of which a seed layer for plating is formed into a treatment space; and reducing the introduced substrate in the treatment space.

15. A manufacturing method of a semiconductor device,
20 comprising the steps of:
introducing a substrate to treat on a surface of which a seed layer for plating is formed into a treatment space;
reducing the introduced substrate in the treatment space;
coating a treatment agent containing a component
25 stimulating formation of plating and a component repressing formation of plating on a surface of the reduced substrate to treat; and

implementing liquid treatment on the surface of the

substrate to treat on which the treatment agent is coated.

16. Semiconductor device manufacturing equipment,
comprising:

a treatment agent coating unit which coats a treatment agent
5 containing a component stimulating formation of plating and a
component repressing formation of plating on a surface of a
substrate to treat; and

a solution bath for implementing liquid treatment on the
surface of the substrate to treat on which the treatment agent
10 is coated.

17. The semiconductor device manufacturing equipment as
set forth in claim 16:

wherein the treatment agent coating unit is disposed in a
treatment space different from a treatment space to which the
15 solution bath pertains or in a treatment space same with that to
which the solution bath pertains.

18. Semiconductor device manufacturing equipment,
comprising:

a substrate transfer unit for introducing a substrate to
20 treat on a surface of which a seed layer is formed into a treatment
space; and

a reduction unit for reducing the introduced substrate to
treat in the treatment space.

19. Semiconductor device manufacturing equipment,
25 comprising:

a substrate transfer unit which introduces a substrate to
treat on a surface of which a seed layer is formed into a treatment
space;

a reduction unit for reducing the introduced substrate to treat in the treatment space;

a treatment agent coating unit, disposed in a treatment space different from the treatment space, that coats a treatment agent containing a component stimulating formation of plating and a component repressing formation of plating on the reduced surface of the substrate to treat; and

10 a solution bath which implements liquid treatment on the surface of the substrate to treat on which the treatment agent is coated.

20. The semiconductor device manufacturing equipment as set forth in claim 19:

15 wherein the treatment agent coating unit is disposed in a treatment space different from a treatment space to which the solution bath pertains or in the same treatment space with that to which the solution bath pertains.